



Ambient temperature, air pollution, and heart rate variability in an aging population

Author(s): Ren C, O'Neill MS, Park SK, Sparrow D, Vokonas P, Schwartz J
Year: 2011
Journal: American Journal of Epidemiology. 173 (9): 1013-1021

Abstract:

Studies show that ambient temperature and air pollution are associated with cardiovascular disease and that they may interact to affect cardiovascular events. However, few epidemiologic studies have examined mechanisms through which ambient temperature may influence cardiovascular function. The authors examined whether temperature was associated with heart rate variability (HRV) in a Boston, Massachusetts, study population and whether such associations were modified by ambient air pollution concentrations. The population was a cohort of 694 older men examined between 2000 and 2008. The authors fitted a mixed model to examine associations between temperature and air pollution and their interactions with repeated HRV measurements, adjusting for covariates selected a priori on the basis of their previous studies. Results showed that higher ambient temperature was associated with decreases in HRV measures (standard deviation of normal-to-normal intervals, low-frequency power, and high-frequency power) during the warm season but not during the cold season. These warm-season associations were significantly greater when ambient ozone levels were higher (>22.3 ppb) but did not differ according to levels of ambient fine (

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3121221>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution

Air Pollution: Interaction with Temperature, Ozone, Particulate Matter

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal, Urban

Geographic Location:

resource focuses on specific location

United States



Climate Change and Human Health Literature Portal

Health Impact:

specification of health effect or disease related to climate change exposure

Cardiovascular Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): heart rate variability

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified